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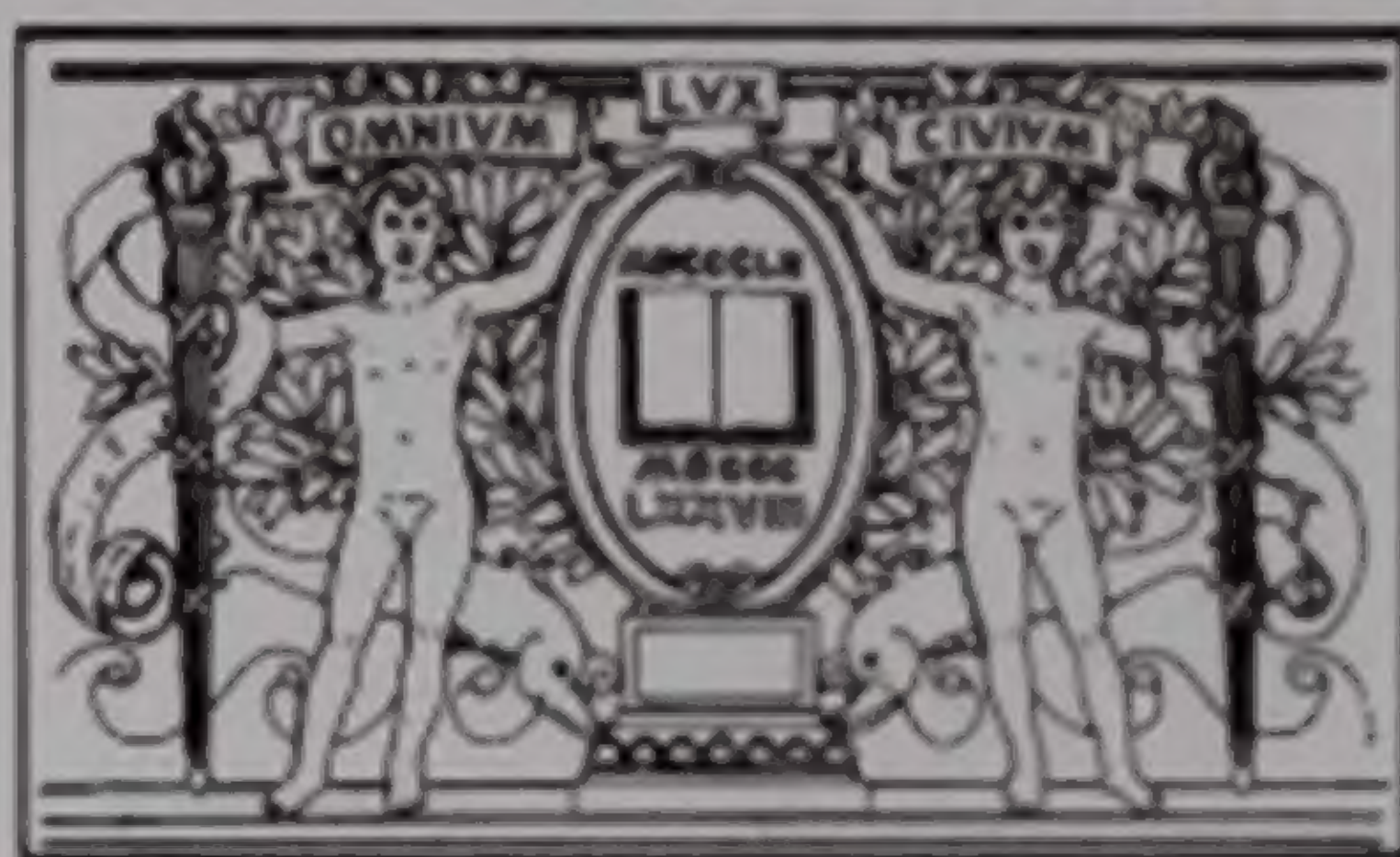
# F-111 AARDVARK

**USAF's ultimate strike aircraft**

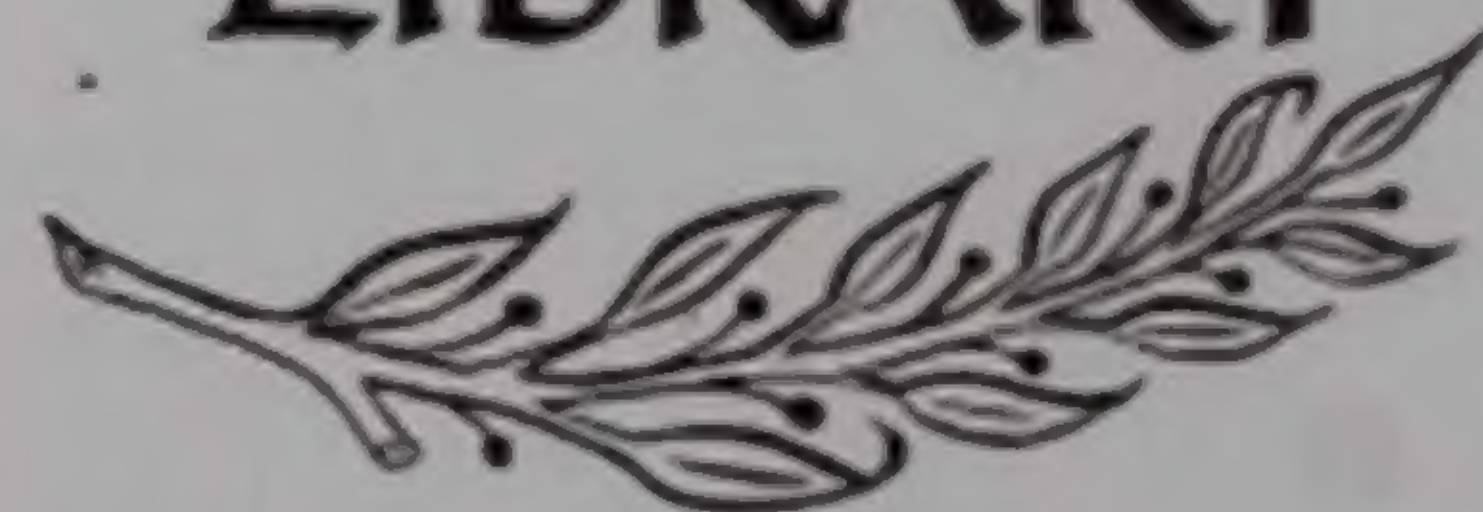


**Tony Thornborough**





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# **F-111 AARDVARK**

**USAF's ultimate strike aircraft**





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**Tony Thornborough**

**OSPREY**  
AEROSPACE



## Acknowledgements

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**Front cover** Proudly wearing its new 'Gunship Quality' grey paint scheme, a veteran F-111D of the 522nd Tactical Fighter Squadron (TFS) from Cannon AFB cruises over the scorched New Mexico plains (*Tom Johnson*)

**Back cover** Marked up in a more typical Cannon F-111 scheme, 68-0122 taxis along the Nellis ramp prior to commencing a *Red Flag* sortie in March 1989. Wearing the traditional drop shadow 'CC' tail codes of the CO's jet on its huge slab fin, this F-111D is armed with a pair of Mk 84 AIR bombs, a single practice bomblet launcher, a TACTS telemetry pod and an inert AIM-9P Sidewinder round, equipped with an active seeker head (*Jim Rotramel*)

**Half title page** The crew of FB-111A 'Ready Teddy' (80254) prepare to close the clamshell hoods and roll. When flying training missions these SAC bombers could sometimes traverse a 2100-mile course which would invariably include two air-to-air refuelling (AAR) plugs, a long, terrain-hugging sweep in 'Auto TF', two simulated nuclear weapons drops, and up to an hour's worth of instrument and landing practice on return to base. During the low-level phase of the sortie 'Medium Ride' was usually selected by the crews, which produced a push-over force of 0.5g. Maximum pull-up authority in 'Auto TF' was 3g, though pilots can, of course, exert some influence on the proceedings and pull back on the stick much harder – as would be the case in a 'toss' bombing manoeuvre (*USAF*)



**Above** Seldom seen sharing the same ramp, two F-111s from opposite sides of the globe head up the performing 'heavy metal' at the 1990 Battle of Britain Air Tattoo at Boscombe Down. The F-111C hails from No 1 Sqn, RAAF, whilst the Foxtrot is a USAFE machine from the RAF Lakenheath-based 494th TFS (*Tony Holmes*)

**Contents page** A fine study of a ghostly grey 42nd Electronic Combat Squadron (ECS) EF-111A Raven at RAF Upper Heyford in June 1992. Holding tenure as the final squadron boss from 19 November 1990 until phase-out in July 1992 was Lt Col James N Worth, whose 'Spark Varks', and crews, saw considerable action in the Gulf conflict. The 42nd ECS's jets flew 471 combat sorties during *Desert Storm*, including 252 missions/704 hours from Incirlik in Turkey, and 219 missions/1155 hours from Taif (*Author*)



# Introduction

Big, bad and beautiful, the F-111 is the USAF's and RAAF's most stately fighter. When in motion it does not readily succumb to the ails of adverse weather or night. Once those big turbofans have started up, and the unfurling of wings and flaps and a blaze of orange-crimson afterburner have committed the jet aloft (a feat performed with remarkable adroitness for a machine with a typical take-off weight of 40 tons!) it tucks in its metal talons and feathers, sweeps its wings, and becomes a spear, beak to the clouds, an attack machine in every sense of the word, determined to punch holes in the most irksome target.

Referred to with considerable affection by crews as the 'Aardvark' or 'Vark', 'Earthpig' or 'Pig', the 'One-Eleven's' smooth handling characteristics and long range have also bestowed upon it the more illustrious title of 'Cadillac of the Skies'. Now in its fourth decade of service, with every likelihood of flexing its wings in modest numbers into a fifth at the start of the new millenium, the F-111 is only just now beginning to receive long overdue laurels. Twenty-five years after the jet entered operational service, today's highly motivated crews still shine with considerable confidence in its myriad complex (and constantly updated) systems, and the strategically-important missions with which the F-111 is tasked: strike, electronic warfare, anti-shiping and reconnaissance.

In many respects, the pride the crews exude has as much to do with survivability as it has with the 'Vark's' trailblazing technical merits; a morale-boosting feature matched only by the new Stealth types. Nine of the 'Vark's' contemporaries went down in Vietnam during the course of 4060 crucially important combat missions which established the concept of autonomous low-level interdiction; a further casualty accrued to the Libya strike (also not directly attributed to hostile fire, like many of the Vietnam losses); while there were no 'Vark' combat losses incurred during the entirety of *Desert Storm* – just a tiny hole in the tail of one machine together with a nick in its windscreen, along with what appeared to be a shotgun-like dent in the intake trunking of another. Testimony to the machine's exemplary handling qualities in combat came from the pilot of the latter, Bill 'Woody' Watkins, who

didn't even know he was hit until the crew chief pointed out the superficial damage after recovery at Taif!

In all, the 86 fighter machines assigned to Saudi Arabia and Turkey notched-up 2830 combat sorties, during which time they dropped 60 per cent of the total tonnage of 'smart' bombs expended by the USAF, culminating in a remarkable balance sheet: over half of all targets confirmed as knocked-out, while representing only seven per cent of the force! As one former 'Swinger' put it, 'Like the proverbial "Bad Girls", the "Varks" went everywhere and did everything', including the heavily-defended sites dotted around downtown Baghdad. Sadly, however, four 'Vark' aviators failed to return from the melee: Frederick 'Art' Reid and Tom 'TC' Caldwell from the 'Liberty Wing', and Douglas Bradt and Paul Eichenlob II from the co-located 390th ECS(P) 'Tronfighters'.

The story is far from over. Avionics modernization initiatives (codenamed AMP and *Pacer Strike*), are imbuing the trusty lady with ever greater confidence, to keep the top-of-the-line recce-strike models in service for another decade, with added safety and reliability to boot. However, that is not to say that the jet is a pushover – far from it. The F-111 can, on occasion, be an inordinately stubborn and unpredictable creature, and tends to exhibit particular impatience with complacent crews by exacting a high degree of 'Situational Awareness' at all times. It demands the best. Indeed, for every Brad Insley and Dick Brown – the two who remain in the 'top hours league' with a cumulative, and impressive, 9500 'Vark' hours between them – not to mention all the new hot 'Vark-Tamers', there are those who have stumbled. Nicknames such as 'Seagull' ('You have to throw rocks at him to get him to fly') or 'Kelvin' ('Because he's an Absolute Zero') constitute constructive censure from peers – and criticism from the aircraft itself. But dare not anyone who has not yet challenged the heights of 'taming the Pig' utter such comments in vain (and the author humbly acknowledges the sentiment!).

Tony Thornborough  
Bristol, England, June 1992

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## In the beginning

**Left** Ordnance is dropped from the F-111 in either a salvo, or in singles or pairs alternating between the wings, lest the bomber dip and turn and deposit its load in a 'Crazy-S' pattern. No fewer than 16 finless BLU-27/B napalm bombs are being kicked free from this Research and Development jet in rapid 'train'. F-111A No 7 (Article A1-7, USAF Serial 63-9772) was one of 18 prototypes which served as precursors to the most advanced strike jet of the 'seventies', 'eighties', and, with updates, the 'nineties'. A total of 523 operationally-capable aircraft were delivered in the nine years between October 1967 and November 1976, comprising: 129 F-111As, 94 F-111Es, 74 FB-111As, 96 Deltas, 24 of the C-model, and 106 of the definitive F. In toto, General Dynamics and its partner Grumman Aerospace (which built the rear empennage and landing gear of virtually all aircraft) produced 562 flightworthy examples if one includes the 39 testbeds and preproduction machines, and 573 if the non-flying fatigue test airframes are thrown into the pot. Quite impressive for the West's biggest fighter, but a fair bit short of US Defense Secretary Robert McNamara's original goal of '3000-plus'! (*General Dynamics*)

**Below** The F-111 originated as Specific Operational Requirement (SOR) 183, issued on 14 June 1960. From this emerged the TFX (Tactical Fighter Experimental) and Navy offshoot the TFX-N, shown here with a 'barber shop pole' test pitot (*Grumman*)







US Navy Government acceptance crews John Norris (left) and Doug Reynolds pose with an F-111B in October 1967. Grumman built nine Bravos, but only seven were ever accepted and only one of these performed carrier trials. Grumman were given formal notification of project cancellation on 9 July 1968. 'Super' and 'Colossal' weight improvement programmes (the so-called 'SWIP' and 'CWIP' efforts) failed to reduce the jet's weight by the necessary ten tons deemed essential for safe carrier operations, while poor out-of-the-cockpit visibility (the aircraft was designed as a stand-off Phoenix missile launcher, not a 'dogfighter') and gradually diminishing 'commonality' with the Air Force version, signed its death knell. The first USAF aircraft to fly was F-111A 63-9766 on 21 December 1964, with Dick Johnson, General Dynamics' chief of flight test operations, grappling with the controls. The premier Navy F-111B (BuNo 151970) followed suit on 18 May 1965 with project pilot Ralph 'Dixie' Donnell and co-pilot Ernie Von Der Hayden 'in the tub'. Principal differences between the marks revolved around the 'duckbill' radome (6.75 ft longer on the more slender Air Force version), and wingspan (7 ft wider on the Navy version, when fully stretched out at 16° sweep) (*Grumman*)







Left Navy Test Pilot Doug Reynolds strapped into one of the 'Seapig's' Douglas Escapac 'bucket' ejection seats, which were fitted to all F-111s pending the introduction of the 'space age' ejection capsule (introduced on F-111B No 4, BuNo 151973, and F-111A No 11, 63-9777). Bravo flight trials continued until 1971 in connection with the AIM-54 Phoenix missile system and allied AN/AWG-9 radar intercept avionics, fine-tuning it ready for Grumman's follow-on VFX F-14 Tomcat. Although the F-111B never entered operational service, it was a technological trailblazer in its own right as it was the first military jet to feature integrated cockpit TV displays which flashed up synthetic graphics instead of raw radar and flight data; the first to demonstrate fire-and-forget long-range radar-guided missile technology in live 'shoots'; and the first, in common with the Alpha variant, to introduce a completely self-adaptive flight control system – features taken for granted in today's fighters. Sadly, three F-111Bs were lost (killing four test pilots and injuring another) during the aborted programme. Not one of the airframes was preserved for posterity (Grumman)

Above The F-111A entered operational service on 17 July 1967 at Nellis AFB, Nevada, with Detachment 1 of the 4481st Tactical Fighter Squadron (TFS), under the command of Col 'Ike' Dethman. The unit deployed to Takhli, Thailand, for *Combat Lancer* operations in March 1968, where it amassed 55 pioneering combat sorties but an alarming three losses: one to hostile fire, another attributed to pilot error, and a third to structural problems traced to a defective electron beam weld in the tail actuator (mirrored by an identical loss at Nellis) which grounded the fleet pending a suitable fix. Upon their return to Nevada the 'Lancers' metamorphosed into the 428th TFS, nicknamed the 'Buccaneers'. The mettle of the F-111A, and its crews, was tested once again during the *Linebacker II* offensive against North Vietnam in 1972. Under the command of Col William R Nelson, 48 'swingers' from the 'Black Falcons' and 'Tigers' sped west to Thailand under *Operation Constant Guard V*. This 'Tiger' lurks in its revetment at Takhli AB, between combat missions at the height of the Christmas offensive, on 27 December 1972 (Copic via Jim Rotramel)





**Above** Nellis's 'Spirit of 76' wore these red, white and blue pin-stripes which extended up to the fuselage spine and along the leading edge of the tail. The 'Roadrunners' relinquished all of their Alphas by 6 August 1977 as part of *Operation Ready Switch*, while under the command of Col Maurice E Seaver Jnr (Don Logan via Ben Knowles)

**Right** Fitting the General Electric M61A1 20 mm gun involved removing the entire starboard bay door and inserting a 'Gat Pack'. The big ammo drum (just out of camera) housed a respectable 2084 rounds, and was cleared to fire 5000 shells per minute. The 'Gat' was eventually removed from all USAF F-111s after the Papa model Sidewinder missile was issued to 'Vark' squadrons beginning in May 1983. As veteran Col Tony Sobol summed up, the gun was purely a self-defence item: 'The concept of using a multi-million dollar aeroplane to strafe the roads? You gotta be shi\*\*in me! I'd rather have an A-I-M-Nine!'. F-111Ds were the last to feature the gun housing and external fairing, though apparently it had been 'guttled' and merely served as a handy luggage rack. A pair of clip-in fuel tanks, suspended from two MAU-12/C racks, could also be fitted within the former gun housing, these providing an extra 585 US gallons of 'go juice'. The tanks took about a day to instal, in contrast to the wing drop tanks, which could be slapped-up and checked out in 15 to 30 minutes (Jim Rotramel)







Above F-111A 67-067 culminated its career at the Air Force Museum with its old 'Roadrunner' codes. At the time of writing, over a dozen 'Varks' had already been assigned duties as gate guardians or as museum pieces. Outrageous plans are afoot to tow some out to the middle of the ranges for bombing practice, though one 'Old Head', attempting to reassure himself and the author, reckoned that 'nobody above the rank of captain will be disrespectful enough to hit one!' (Jim Rotramel)

Left Up-and-away from Nellis in December 1979 goes the ex-Bicentennial bird (67-076) in the new markings of the 366th TFW 'Gunfighters', which traded-in its mighty F-111Fs for the comparatively basic Alpha models during 1977, freeing the former for frontline NATO duties. Based at Mountain Home AFB, Idaho, the 366th comprised three squadrons of attack models: the 389th TFTS 'Thunderbolts', 390th TFS 'Wild Boars' and 391st TFS 'Bold Tigers'. The 'Boars' disbanded on 1 October 1982 as airframes were withdrawn from the wing for conversion to the EF-111A jamming configuration, and reformed a couple of months later on 15 December as an Electronic Combat Squadron, following delivery of the reworked 'Gray Airplanes' from Grumman (Frank B Mormillo)



A latter-day line-up of Alphas from Mountain Home's old 'Blue Squadron', the 391st 'Bold Tigers'. The 391st disbanded first, followed by 'Gold Squadron', the Replacement Training Unit (RTU), during a gradual stand-down that extended for two and half years through the end of 1992. As aircraft became due for major maintenance tear-downs they were shipped off to the 'boneyard' instead of to the depot. The 366th TFW has since become a 'composite wing' within the new Air Combat Command, flying multifarious types ranging from Eagles to tankers - but no 'Varks' (Doug Remington via Richard L Ward)





# SAC swingers

Below FB-111A No 1 (67-159), assigned to Sacramento Logistics Center, in its dazzling livery of black, gloss red and white, punctuated only by the window of the AN/ASQ-119 Astrocompass. Fitted with 'Triple Plow I' inlets, this aircraft never saw operational service but served for two decades instead as the representative test ship for the fleet, sampling various ECPs (Engineering Change Proposals). The second in the series (67-160) was fitted with interim double blow-in door 'Superplow' inlets, and served at Edwards for a short while before being retired and its entire aft end butchered to repair No 8 (67-7194), which was stricken in a hard landing in February 1976. Interestingly, the hybrid returned to, squadron duties in September 1980 and became known as 'Fraken Vark'. It was the first of over a dozen complete rebuilds undertaken by General Dynamics.

*(via General Dynamics)*



Right FB-111As were the first mark to fly with the revised 'Triple Plow II' inlets beginning with No 3 (67-161), which was delivered in June 1969 (the first F-111Es with the same fit followed in a matter of weeks). Separation from the airframe was increased by four inches to improve boundary layer 'plow', and the translating cowl replaced by a series of three blow-in doors. The large quarter spike is designed to ensure subsonic flow of air throughout the flight regime. At higher Mach numbers the spike unfurls like a metallic carapace to engulf most of the intake. Strategic Air Command's 'Bullet Bombers' (named after the AGM-69A SRAM nuclear missiles they carried, which allegedly possessed the radar signature of a .45 in lead slug!) were also the first of the breed to incorporate flightline programmable Bomb-Nav-System (BNS) computers in an age where many thought that 'software' had something to do with the cockpit upholstery! Two of the fourteen computers held the 'mission tape' data for the Mk IIB BNS, which was fed in via a punched paper ribbon disgorged from a deep freezer-sized trolley, very similar to that used by the SR-71A (which shared many navigation systems, including the Astrocompass. Not surprisingly, several of the 'Varks' best right-hand seaters were later selected as Recce System Officers for the trisomic 'Lead Sled'). For preliminary INS alignment, prior to taxi-out, each and every FB-111A originally had its own brass plate, which provided the exact co-ordinates of the parking spot *(Tom Johnson)*







Tanker antics. The F-111's stability-augmented flight control system enables it to perform well on the boom. The 'Bullet Bomber's' modest range dictated semi-forward basing in New England and plenty of tanking practice! Emergency War Orders typically tasked the aircraft on a 'one way' mission with recovery in Iceland or Turkey, prior to turnaround. First to form with the strategic model was the 509th BW(M) 'Enola Gay' Wing at Pease AFB, New Hampshire, which received its first 'Varks' in December 1970, and achieved alert status with two of them during October of the following year. In the early days, pilot candidates needed 2000 hours to join the 'F-B Program', and right-seaters no fewer than 1500 hours. Most of the original batch came fresh off the 'hot'

B-58 Hustler or B-52, and were introduced to the sporty 'Bantam Bomber' in stages, beginning with daytime flying and progressing on to night-time/instrument low-level work. The seven month-long conversion courses were handled by the 340th Bombardment Group at Carswell AFB, Texas, which received its first 'swing-wing' bomber on 29 September 1969, when Col Winston I Moore picked-up 67-7193 from just across the field. The unit disbanded on 9 September 1971 when the training job was handed over to the 360th BW(M) at Plattburgh AFB, New York; Carswell's pioneers notched up 3179 sorties and 13,312 flying hours preparing crews for the two combat-ready wings in New England prior to being disestablished (USAF photo by Walt Wehle)



The 'Enola Gay' Wing, based 40 miles north of Boston, formed with two Bombardment (Medium) Squadrons: the 393rd 'Tigers', and 715th 'Eagles'. When FB-111As from the 'Burgh were not picking up the trophies for bombing and navigation prowess, they were. The 509th received top honours between 1979 and 1983 (with the exception of 1980, when the well-represented 'Buff' entrants finally got a look-in), while its 'Tiger' component participated overseas in NATO's famous feline gatherings at Klein Brogel in Belgium, and Montijo in Portugal, with appropriately decorated jets. Top scores were the 'Vark's' hallmark. During the 1989 *Proud Shield* bomb comp, F-111s from the 'Burgh, Pease and Cannon swept up all three top placings for the LeMay trophy! (USAF photo by MSgt Buster Kellum)







**Above** In its last SAC Bomb-Nav Comp in 1989, 'Lucky Strike' finished second overall, just points behind another FB-111A. Tom Johnson recalls that 'This is a tribute to not only the operators, but to the hundreds of maintainers whose hard work and sweat made that jet fly like it was brand new'. The fleet was plagued by technical glitches during the 1970s and matured during the following decade to the extent that the troublesome 'girls' performed better than ever, and could have gone on this way virtually forever following the Avionics Modernization (AMP) refit. However, due to a changing geopolitical world, only a dozen now remain operational in a training capacity in New Mexico. (Tom Johnson)

**Left** In deference to the 380th's long-standing bombing traditions, FB-111A No16 (80244) 'Lucky Strike' featured this dazzling array of artwork on its flank and fincap. The 'Burgh's 528th and 529th Bombardment Squadrons transitioned to the FB-111A beginning on 17 July 1971, and within three years were hauling in all the trophies at SAC's annual *Giant Voice* (later *Proud Shield*) Bombing and Navigation Competition. They came out on top in 1974, 76, 77, 78 and 84 — the only other unit to come close to this happened to be the sister wing, the 509th, which received top honours on four occasions! The 380th also provided Combat Crew Training under the aegis of the 4007th CCTS (later known as the 530th CCTS, which took over the RTU function from Carswell), and 'hands on' ground crew training under the jurisdiction of Field Training Detachment 210(S). The lineage of the 528th and 529th can be traced to World War 2 when the units flew B-24 Liberators and wreaked havoc on Japanese supply lines all over the Pacific, from Java to Formosa. Ironically, the units formed at Monthan Field in Arizona — 50 years later, this became the resting place for the wing's 'Dark Varks', which are now gathering dust in its 'boneyard'. (Tony Cassanova)





Above One of Capt Tom 'TJ' Johnson's self-portraits, entitled 'Cool Reflections'. Tom did a three-year tour at Plattsburgh before eventually going on to fly KC-10A Extenders at Barksdale, Louisiana. He recalls that 'From the exhilaration of bending the Vark through the valleys in Tac formation to the intense concentration of a night IFR/TFR radar laydown, the FB-111 was a total joy to fly. A Vark at 1.2 Mach at 50 ft is a sight that will water your eyes' – and those of the gophers too. The shockwave kicks up a cliff of dust and crud in the bomber's wake! (Tom Johnson)

Right Swing Wing Crow Defendere 'Werewolf' keeps an eye on proceedings. 'Bullet Bomber' navigators were some of the most highly qualified to serve in the USAF – at one time drawn from the top ten per cent of their classes – and they performed a strategic 'Wild Weasel' role, amongst other things, monitoring the threats and zapping them with nuclear-tipped AGM-69 SRAMs (Short-Range Attack Missiles). The 'Varks' primary task was to 'roll back' the enemy's radar defences, to open up corridors for the four- and eight-engined heavy bombers and a 'RHAWS (Radar Homing and Warning System) bomb' mode was available if the SRAMs 'went ape' (Tom Johnson)







**Above** A brace of 'Dark Varks' maintain formation over Lake Michigan. The bending moments on the wings are noteworthy. These travelled a maximum of around five feet, and were apt to flex quite a bit too during normal manoeuvres, depending on the wing loading (a function of g, aircraft weight and sweep). The complex WCTB (Wing Carry-Through Box) on the F-111 initially posed major problems for the USAF. The structural failure of one on an Alpha model at Nellis on 22 December 1969 caused all F-111 deliveries to be suspended pending non-destructive checks and a gusset retrofit to 'beef up' the box, with the inevitable result that these were not resumed until the following July, when mating of sub-assemblies at Fort Worth was gearing up to its peak. As a consequence, in the ensuing eight months through March 1971, the USAF took delivery of no fewer than 123 aircraft, including 71 FB-111As. The final example of this breed was handed over on 30 June 1971 (Tom Johnson)

**Left** Nobody really knows how fast the big 'Vark' could go. Friction-generated heat on the lightweight windshield was a limiting factor, and crews were furnished with a warning lamp and 300 sec digital countdown in which to throttle back if the sensors became unhappy. Operationally, the FB-111A was 'red lined' at Mach 2.2 at altitude. 'Down in the weeds', it could cut through the sound barrier with ease, though mostly was limited to transonic speeds, to make the most of its 10,000 hr airframe fatigue life (Tom Johnson)



When you fly at 450-700 knots at low-level for a living, the paint of your steed is bound to peel off! 'Varks' required constant touch-up work to maintain the integrity of their camouflage schemes. AAR (Air-to-Air Refuelling) speeds were considerably gentler on the airframe, tanking usually being conducted at around Flight Level 200-220 ('20 to 220 Grand') (Jeff Wilson)







Above Post top-up, 'Peace Offering' (80288) begins its let-down to the instrumented bombing range. Previously known as 'Oil Burner' and 'Olive Branch', these routes were renamed as simply Visual (VR) or Instrument (IR) routes. Many routes transited Strategic Training Ranges (STR) where Radar Bomb Scoring was used as a means of evaluating crew proficiency: instead of pickling off a bomb, the 'Varks' BNS would simply transmit an electronic signal which was correlated with its speed and heading, and also recorded on the radarscope photos *(Tom Johnson)*

Right 'Dark Varks' and dark GLOBs (Ground-Loving Old Bastards) maintain their 'cells' during 'gassing-up' operations in December 1990. Both FB-111A wings enjoyed access to their own alert force of KC-135s, in SAC's old 'go get 'em' tradition. In the early days, the regime was particularly strict, and crews failing to report on time for alert duty were ceremoniously given the old LeMay boot-and-scissors treatment. Life in today's Air Combat Command tends to be more relaxed, but just as professional. AAR top-ups could take the FB-111A up to its in-flight maximum AUW (All Up Weight) of 122,900 lbs! *(Tom Johnson)*







Left With wings locked-out at 26° over the Rockies, a 'Bullet Bomber' shows off its latter day camouflage scheme, comprising overall FS 36081 grey mixed with splodges of 34086 green on the upper surfaces and flank, and dark 36118 grey on the belly and wing undersurfaces. The sinister scheme earned the aircraft the new nickname 'Dark Vark', and was popular with the crews as it lent their machines greater commonality with the 'fighter' variants at tac-air meets. . . (Tom Johnston)

Above . . . And with wings swept at 68° for supersonic flight, 'Dark Vark' 262 roars past the camera executing a 360° roll, proving its sprightly performance. 'Bullet Bomber' pilot with the most hours on type was Lt Col John Plantikow, who logged 3170 hours – the highest number clocked-up in any single USAF variant at the time of writing. Like his peers in the high-hours tactical league, Plantikow maintained a 'good attitude' towards the controversial FB-111 through the ups-and-downs of its operational life. As two Gulf veterans from the 494th FS put it, 'The New Guys have to acquire added SA [Situational Awareness], and the Old Heads can lose it really fast'. The key ingredient to success was to avoid panic when the 'computers started doing things on their own' during night/IFR missions at low-level (Tom Johnston)





These pages and overleaf While at their operationally-ready zenith, SAC's FB-111As, and those assigned to the 'Burgh in particular, served as steel canvas for some of the USAF's finest airbrushed nose art. Among the 'classics' were 'SAC Time' (80286), 'Queen Hi' (80289), 'Silver Lady' (80250), 'Sad Sack' (80269), and 'Angel in de Skies' (80265) (Tony Cassanova and Tom Johnson)





SAD  
SACK



Angel in  
de  
Kies



Shu-Chi  
Babu







**Left** The 'Vark's fincap housed the Cincinnati Electronic AN/AAR-34 CMRS, a device cooled to 77°K (-196°C) so that it could pick up hostile fighters or missiles zooming in on the jet's rear quadrants. The system was improved in the late 1980s and several of the protective caps were decorated for peacetime training, including 'Behind the Eight Ball', which alluded to the FB-111A's top-scoring abilities at competition level. SAC peaked with a force of 73 machines (one having been written-off just prior to delivery, while the first duo of 76 eventually manufactured comprised a prototype and a preproduction example). However, owing to ongoing test commitments at Edwards and others being 'pulled' out of service for deep maintenance at McClellan's Sacramento Logistics Center (SMALC) in California, there were never more than 66 machines split between Pease or Plattsburgh at any one time. At the end of the FB-111's career, the grand total had dwindled to 60. The last to go down was 80243 from the 509th BW(M), formerly 'Jungle Queen', which crashed near St Johnsbury, Vermont, on 2 February 1989. Like most 'Vark-Vators' given the opportunity to pull on the 'tiger' handles, its two-man crew escaped unscathed (Tom Johnson)

**Above** The SAC and Aussie heavyweights often launched in this peculiar pigeon-toed tank configuration, which permitted the outboard fixed pylons, preset in sympathy with the 26° lock-out, to be used to haul extra fuel. Once expended, the fixed tanks and pylons would be jettisoned. Watching a 'Vark' take-off in this configuration was one of modern aviation's more bizarre sights! The FB-111A's weapons bay could be fitted with either a pair of AGM-69A SRAM missiles, or Mk B-57, -61 or -83 nuclear gravity bombs (or their inert Bomb Dummy Unit equivalents). The cockpit switches included a nuclear DCU panel which provided FUFO (full fuzing options) for air or ground burst, parachute-retarded laydown or 'slick' loft delivery, and embodied a 12-digit safety code which was entered following a 'go to war' code conveyed via SATCOM (satellite communications) link. Gravity bombs were typically carried on the inner pivot pylons (as they were on F-111E/Fs formerly tasked with the 'Victor Alert' mission in England). AGM-69 SRAM missiles were removed from the inventory on 7 June 1990 under the express orders of Secretary for Defense Dick Cheney owing to safety concerns regarding the integrity of their W69 nuclear warheads in the event of a fire. As a result of this decree the FB-111As spent the last year standing on alert with only gravity bombs (Tom Johnson)









**Previous page** 'Shy Chi Baby' (80251) from the 380th BW(M) over up-state New York on approach to Plattsburgh. Despite the intrinsic dangers of low-level flying at the 'speed of heat', the F/FB-111 boasts an impressive safety record. 412 were still serving when this bird was captured on film in October 1990, 23 years after the 'Vark's' operational debut, and by which time the fleet, worldwide, had notched-up some two million flying hours! (Tom Johnson)

**Left** The last of SAC's 'Dark Varks' took off from Plattsburgh on 10 July 1991, bound for the 'boneyard', marking the end of an illustrious history. At the controls of 'Little Joe' (80249) were the 380th Wing boss, Col J Paul Malandrino, and right-seater Capt Mark McCausland. Seen in happier days are this pair of 'Bantam Bombers', on approach to their birth place, Fort Worth, Texas, 18 months prior to the fateful 'chop' (Tom Johnson)





# Brisbane's Buckshots

*Left* Under *Project Peace Lamb*, Australia received four 'six-packs' of F-111Cs between 1 June and 12 December 1973. These were joined by four Alphas in the Spring of 1980, suitably modified as attrition replacements with the addition of extended wings and other characteristics honed for Antipodean operations. Today's force of 22 aircraft serve under No 82 Strike Wing based at RAAF Amberley, near Brisbane, with No 1 Sqn ('Videmus Agamus', callsign 'Buckshot'), and No 6 Sqn ('Nous Reviendrons', callsign 'Falcon'). Endowed with a healthy range, the F-111s are often sent overseas to participate in exercises with other Asian nations, and occasionally further afield to Nellis or Bergstrom, in the US, for the odd *Red Flag* or Reconnaissance Air Meet. In June 1980, as part of the RAAF's celebration of the 50th anniversary of the Battle of Britain, No 1 Sqn sent a two-ship to the UK to participate in the huge Air Tattoo held at A & AEE (Aircraft and Armaments Experimental Establishment) Boscombe Down. (Tony Holmes)

*Below* Having just recovered at the Hampshire airfield after a four-day global crossing, the navigator of A8-142 secures the red plastic covers over the various UHF radio antennae beneath the jet's long proboscis. The two F-111s had 'pitted' at Pago Pago (US Marshall Islands), Hawaii, McClellan AFB, Plattsburgh AFB, CFB Goose Bay and finally RAF Upper Heyford, prior to reaching Boscombe Down. Of the pair, only this jet suffered any technical 'write-ups' during the marathon haul - minor avionics problems beset the aircraft's dated ARC-112 VHF radio equipment. (Tony Holmes)







Left To mark the F-111C's first appearance in European skies since 1977, and in anticipation of the squadron's 75th anniversary (January 1991), the then unit OC, Wg Cdr Pete Criss, decided that it was time to replace the familiar yellow lightning bolt on the slab fin of the 'Pig' (the beast's 'Aardvark' nickname is based on the Afrikaans for 'Earth Pig', which the redoubtable Aussies have affectionately abbreviated to 'Pig!') with a design that better reflected the squadron's identity. A unit-wide competition was held and over 30 designs were submitted. No one entry was chosen as the definitive motif, the squadron instead deciding to combine the best parts of several submissions. A8-142 and -144 were the first jets resprayed with the new tail colours, and in this photograph a proud Wg Cdr Criss (wearing traditional RAAF head gear!) gives the 'Supersonic Kookaburra' a final polish. One of the Air Force's most experienced F-111 pilots, Pete Criss has since been promoted to group captain rank, and he is now in charge of No 82 Wing (Tony Holmes)

Above Whilst A8-142 performed its now legendary airshow routine over the Hampshire fields, A8-144 sat proudly in the static display waving the No 1 Sqn flag. Both jets carried a pair of 600 gal external tanks during the long flights to and from RAAF Amberley, as well as a travel pod containing TDY essentials (golf clubs, tennis rackets and the odd Slouch Hat) in place of the Pave Tack (Tony Holmes)





Above A random pile of 'bone domes', G-suits, flight stowage bags and aircraft maintenance manuals soak up the warm early summer sun whilst their owners complete the post-flight external checks (*Tony Holmes*)

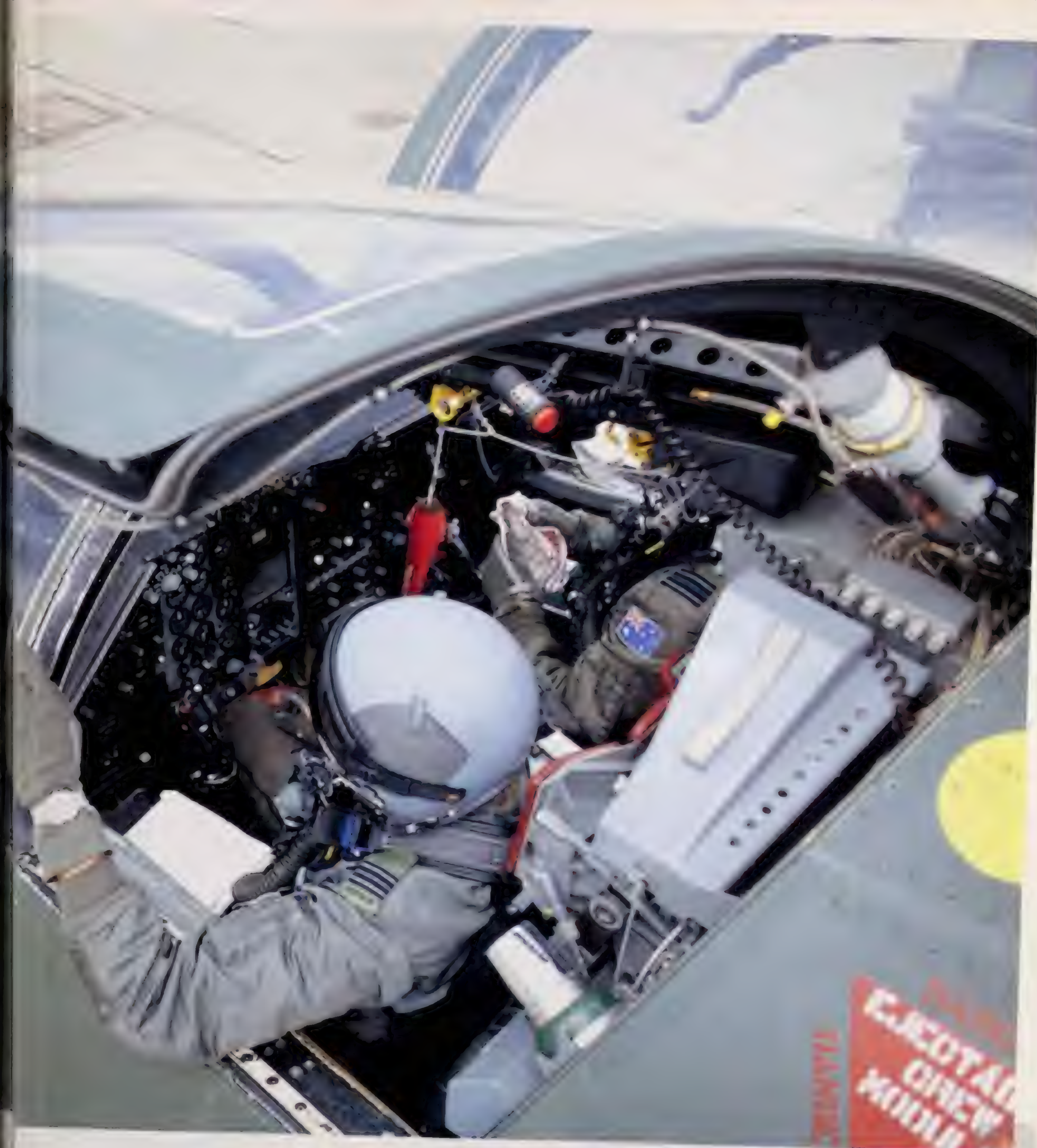
Right Extremely proud of their seemingly ageless 'Pigs', the No 1 Sqn groundcrews commence the 'spit and polish' treatment on A8-142. As can be seen from this angle, the Navy parentage of the F-111's undercarriage is readily apparent! Over 20 groundcrew were despatched from Amberley aboard a No 33 Sqn Boeing 707 in support of the F-111Cs (*Tony Holmes*)







Strapped into the 'hot seats' (literally, bearing in mind the aircraft's dramatic 'dump and burn' routine), Sqn Ldrs Mark Skidmore (pilot) and Terry Delahunty (navigator) run through their respective preflight check notes prior to cranking up the twin TF30-P-3s. As the designated display pilot at No 1 Sqn, the then newly promoted Mark Skidmore had barely a fortnight to work up his routine back at Amberley after returning from an exercise in the Philippines. 'We put in two weeks of solid practice, in between operational sorties, working our show routine down from our basic display ideas to the routine we put on over the Boscombe Down weekend. Our first display at Amberley took about 10 minutes, but we tightened that up to a definitive time of six minutes twenty seconds for the show proper!', explained Mark Skidmore (Tony Holmes)







**Left** Visor down, the pilot surveys his surroundings from the lofty perch of his F-111C. As part of the A\$403 million Avionics Upgrade Programme recently initiated by the Australian government for the 22 surviving 'Tigs', the pilot's antiquated dials and strip gauges will be replaced by a Honeywell Digital Flight Control system, and its associated 10 cm' Multi-Function Monochrome CRT cockpit displays. Mark Skidmore (along with Sqn Ldr Mike Hurman) is currently involved in the post-modification trials of the first upgraded F-111 (A8-132), which has been overhauled by prime contractor Rockwell Automation at their Palmdale, California, facility. The remaining F-111s will be reworked by Hawker de Havilland in Australia following the successful completion of A8-132's exhaustive post-mod trials in mid-1984. (Tony Holmes)

**Above** With their final pre-show rehearsal completed, the crew of A8-144 roll down the long Bencombe runway, the F-111's huge trailing edge flaps dangling in the breeze, and the distinctive wing fences skewed open. When deployed at this angle, these movable surfaces improve the airflow over the glove/wing junction. Used primarily during the take-off and landing phases of the F-111's flight regime, the fences automatically return to their flush position as soon as the wings are swept back. (Tony Holmes)





Saturday display over, A8-142 taxis across the live jet ramp prior to being chocked and shut down. Although the display rehearsals were flown in -144, the actual weekend slots were performed in this jet. During their week-long stay at Boscombe Down, the aircrew made the most of their temporary home by flying at least two sorties per day up until the Thursday before the airshow. 'While we have been here we have tried to take the aircraft out and use them in an operational role to prove that we can fly an F-111 half way across the globe and still perform a task with it', explained Wg Cdr Pete Criss at the time of his visit. Two low-level sorties over Scotland were flown per day, and any other flying on top of that had to be performed at a hard deck ceiling of no less than 2000 ft. Unfortunately the crews could not make full use of their foreign environment because they were not permitted to engage the APQ-128 terrain-following radar (TFR) during their sorties – this system is used constantly during tactical flying in Australia (*Tony Holmes*)



A8-134 on the ramp at Nellis, Nevada. RAAF F-111s have regularly participated in Red Flag musters there, and in Reconnaissance Air Meets (RAMs) at Bergstrom AFB, Texas, since the mid-1970s. Four RF-111C 'Photo Pigs' (A8-126, -134, -143 and -146) exist with this unique swing-down pallet modification, custom-built by CD for Australia during 1979. The sniping 'kit' comprises two KS-87C framing cameras, two panoramic wrappers (a KA-50E lo-alt and a KA-90A4 hi-alt model), and an AN/AAD-5 Infrared Linescanner. Additional gear includes a TV viewfinder, which assists with line-up for the photo-run. The recon ships retain full conventional attack capability for the swing-wing, swing-role mission. Its super range has always kept it in the thick of things. As one senior pilot remarked, 'You can get into an F-111C in Brisbane on a black and nasty night and deliver bombs on a target in, say, Melbourne – all at 200 ft AGL without ever seeing the ground. You can use it on an anti-shipping strike in the morning against a target in the vicinity of Cocos Island and against a land target 2000 miles distant from that on the same evening' (*M. Staley via Peter Davies*)





Above Flying from RAAF Edinburgh's ARDU (Air Research Development Unit) in South Australia in a lively livery is dedicated 'Test Vark' F-111C A8-132, shot here with its wings locked-back at 72°, zooming in 'Auto TF' mode with a foursome of GBU-10/B Laser-Guided Bombs (LGBs) underwing. This workhorse acted as the proof-of-concept ship for many of the 'smart' bombs and missiles recently acquired for No 82 Strike Wing, including Pave (Precision Avionics Vectoring Equipment) category LGBs and GBU-15s, the Pave Tack interdiction sensor, AGM-88B HARM anti-radar missiles and the AGM-84 Harpoon anti-ship missile. As a result of this testing work No 1 Sqn is the only 'Vark' unit in the world to handle the 'blue water' anti-shipping task with sophisticated stand-off missiles. The trusty test ship has recently been resprayed in a new experimental grey scheme, as an adjunct to test work. The aim of this programme is to give the RF/F-111C models a digital BNS by integrating modern digital avionics with the 'Tack Recce' models' reconnaissance and targeting sensors (RAAF)

Left The RF-111C presently retains the chunky controls and spinning odometer-style Nav and Attack 'windows' of the 'vanilla' Mk I BNS, virtually identical to that employed in the Alpha and Echo. The 'Recce Vark' modification programme introduced a set of recon suite buttons forward of the standard WCP (Weapons Control Panel) at right, and a new TV viewfinder display under the E-Scan and RHAWS tubes. However, the navigator's portion of the dashboard will soon become completely digital, with provisions for 'hands off' point-to-point flight based on electronically-stored mission data (RAAF)



# Fireballs, Crusaders, Hounds

An impressive line-up of 'Aardvark' noses at Nellis. The 27th TFW at Cannon AFB, New Mexico, received its premier F-111D (which was actually No 6 to come off the lines, 68-090) on 13 November 1971, piloted-in by the wing commander, Col C E Francis. The last of the mark arrived on 28 February 1973. After several years of chops and changes, by 1 January 1980 the component squadrons within the wing consisted of the 522nd TFS 'Fireballs', 523rd TFS 'Crusaders', and the RTU, the 524th TFS 'Hounds', which provided combat-ready crews for the other two squadrons as well as 'basic' and 'transition' training in preparation for the Foxtrot model  
*(Frank B Mormillo)*







F-111D 68-0137 from 'Red Squadron', the 522nd 'Fireballs', takes to the air with eight Mk 82 500-pounders fitted in the 'Slant-Four' configuration. Although capable of carrying four 'six packs' of these bombs, or heftier CBUs, drag and wing-sweep (limited to 54° when the inboard racks are 'bombed-up') usually mean aircraft are launched with a maximum of a dozen. The F-111D is the only operational 'Vark' to feature the Norden AN/AVA-9 Integrated Display Set, part of the 'cosmic' Mk II BNS – a 'first generation glass cockpit' which suffered from abysmal reliability before several 'fixes' were introduced. Availability bottomed out at about 34.4 per cent, while at one stage in 1973 there were no fewer than 21 F-111Ds also awaiting attention to their leaking fuel tanks! As a result, the wing possessed many 'low hours' aircraft and did not deploy overseas until September 1978, when *Coronet Kingfisher* dispatched eight 'Fireballs' to Gardermoen, in Norway, to participate in NATO exercise *Northern Wedding*. Overseas *Coronet* venues included biennial Oriental excursions by the 523rd 'Crusaders' to Sachon AB, South Korea, for *Team Spirit* manoeuvres, beginning in March 1981; triennial deployments by the 522nd 'Fireballs' to RAF Boscombe Down, England, beginning with *Coronet Hammer* in May 1980 (and ending with a fifth tour, this time to RAF Lakenheath, in June 1992); deployments to Elmendorf AB, Alaska, for *Brim Frost*, and to Cairo West, Egypt, for *Bright Star* exercises. These successful operations enabled the wing to shrug off its previously besmirched availability record (*Jim Retramel*)





Above The 27th TFW commander's jet roars over 'homeplate'. 68-127 suffered a major electrical ground fire and subsequent main-gear collapse on 7 July 1981, and spent 27 months being reworked in the General Dynamics 'Plane Hospital' before returning to duty on 6 July 1984. The GDFW 'Hospital' resuscitated 13 previously stricken 'basket cases' between September 1978 and November 1988 (27th FW)

Right Maj Dick Brown ready for action at Cairo West, Egypt, for *Bright Star 83* – 'I took the Keffiyeh with me to pre-flight and to wear in case we had to eject in the desert'. Dick Brown is another 'living legend' within the 'Vark Community, having logged 4550 flight hours in the Alpha, Echo, Delta and 'Tack Vark' models as Aircraft Commander (surpassed only by Brad Insley who accrued some 4800 as AC). Despite his massive tally of operational hours Brown also tops the instructor-hours league with 3454 of them as IP. The friendly rivalry between Dick Brown and Brad Insley remains a source of fun for both aviators, the pair now flying commercial aircraft with American Airlines from the company's Dallas-Fort Worth hub in Texas (Dick Brown)







**Above** A beautiful study of two of Cannon's dart-like 'Varks', groundborne but with 'supersonic' wings: the wing commander's jet (68-127), and the 'boss bird' of the 522nd TFS (68-122), which, at the time of writing, is currently flown by Lt Col Tony Sobol (an 'Old Head' with strong combat associations with other F-111 'Red Squadrons' too, including the 'Takhli Tigers' in 1972 and Lakenheath's 'Panthers' in 1986) (*Jim Rotramel*)

**Right** 'In the groove for gas'. Cannon's 4295 ft elevation in the eastern High Plains of New Mexico lends the base an open-air feel which contrasts sharply with the drizzly, highly populated and heavily wooded English bases where the 'Vark' served for so long as the centrepiece of NATO. The bugs hate the rarified air, while the relatively unrestricted airspace and nearby Melrose bombing range is much coveted by the aviators, albeit that there's little to do there except fly! By the end of 1993, Cannon will be the only American 'Vark Town' with over 100 'swingers', comprising three squadrons of F-models, one training unit flying AMP-updated Echoes, and the Raven-equipped 430th Electronic Combat Squadron. The 'Deltas' are gradually being consigned to the 'desert boneyard' at Davis-Monthan AFB, Arizona, as the F-111Fs return from England to replace them. The process began in February 1992 with the 524th's machines, and progressed to the 522nd's jets beginning that August (*Tom Johnson*)







Above and right The top 'Fireballer' taxis out of its parking spot at *Red Flag 89-3*, complete with 'Soo' practice dispensers, inert 'Winders', and a pair of hefty Mk 84 AIR (Air Inflatable Retard) 'Ballutes'. Fitted with the BSU-50 tail group, the AIR transformed the Mk 84 'Hammer' into a low-level delivery weapon, which Dick Brown described as 'The best bomb we've got – just drop it and it makes a "mini-mushroom"!'. Its greatest asset is its lay-down potential. The old Mk 84 LDGP (low-drag general purpose) 'slick' version forced the F-111 to climb off the target in reheat to at least 1700 ft AGL to avoid being punctured by its own ordnance, placing it smack in the middle of the enemy's thickest defences (Alpha 67-060, crewed by Hackridge and Graham, was lost during such an attack against Phuc Yen airfield, North Vietnam, on 16 October 1972). It took 15 years for weapons technology to catch up with the F-111 (*Jim Rotramel*)







Above Practice BDU-33 25 lb 'slick' bombs dominate the camera frame as ground crewmen TSgt Charles Hancock, SrA Michale Vest and TSgt Donald Brown from the 523rd AMU prepare a Delta for wargames over CFB Cold Lake's Air Weapons Range in Alberta, Canada, during *Maple Flag XXV* in May 1992. Six 'Crusaders' and their entourage of air and ground crews, plus support equipment, deployed for the event, which marked the last appearance of the F-111D in Canadian skies before their retirement. Besides being the final *Maple Flag* for the Delta model, this exercise was also significant tactically as, in contrast with earlier exercises which were established to train crews for 'high intensity' combat in central and northern Europe, it focussed its attention upon the 'medium intensity' scenario - a change which reflects the diminished threat from Eastern Europe's former Warsaw Pact forces (*Mike Valenti*)

Left Cannon's 'Varks' were the first to relinquish the Vietnam disruptive decor in favour of overall FS 36118 'Gunship Quality' grey. The F-111 is one of the very few types to use epoxy primer coated in acrylic lacquer (as opposed to aliphatic polyurethane paints), and is completely reworked, down to the skin, at eight-year intervals, a process which consumes an average of 880 manhours. Cannon undertook its own crash topcoat effort to speed things along, with the result that many aircraft suffered from excessive peeling and staining (particularly under the engines between the strakes, which were eventually left black, pending proper rework at Sacramento!). A 522nd 'Fireballer' displays the new grey during *Pecos Thunder 92-1* (*Tom Johnson*)





Above Redesignated F-111Gs and given a new coat of paint to make them 'tactical-looking', two dozen of SAC's old 'Bullet Bombers' were reassigned to Cannon for RTU duties, pooled under the auspices of the 428th TFTS 'Buccaneers', which was formally commissioned at the base on 1 April 1990. The RTU, in line with the fleetwide dropping of the term 'Tactical', is now known simply as the 428th Fighter Training Squadron. The boss's ship (96512) is depicted here in front of Cannon's Control Tower during their first summer in New Mexico, when Col Peterson relinquished command of the unit to Col Franklin (*Jim Rotramel*)

Above right 'Dark Varks' from the 'Enola Gay' Wing at Pease AFB, New Hampshire, were the first to undergo the extensive Avionics Modernization Program (AMP) refit, beginning in December 1986. AMP created this cockpit configuration which Maj Mike Sweeney described as a 'hybrid' - part old-fashioned needles and dials, part state-of-the-art digital. The system comprises a highly accurate

RLG (Ring-Laser Gyro)-driven inertial set, new 64K computers for the BNS, a DTM (Data Transfer Module) flightplan-loading system, plus a pair of new MFDs (Multifunction Displays). The update increased MTBF (Mean Time Between Failure) of the avionics by an order of magnitude to well over 40 hrs. The F-111G and AMP F-111E cockpits are virtually identical, and this will ease the 'Buccaneers' transition to the latter during the spring of 1993 (*Tom Johnson*)

Right F-111Fs have now joined forces with the 27th Fighter Wing (their fourth, after a year under the 347th, five with the 366th and fifteen with the 48th). They have also served for many years with Detachments 2 and 3 of the 57th FWW, and will remain on its Fighter Weapons School and operational test inventories for several years yet as brand new weapons like the AGM-130A (a rocket-propelled version of the GBU-15 'smart' bomb) are fine-tuned (*Rockwell International*)







## Echoes from 'Heyford

RAF Upper Heyford, 12 miles north of the university town Oxford, was one of two bases in England (the second, Lakenheath, being situated not far from that 'other' great seat of learning) which eventually became home for a total of nearly 200 'Varks', and home-from-home enclaves for thousands of serving USAF personnel – most of whom were also highly qualified! The first 'swingers' to arrive (F-111Es 68-035 and -045) were assigned to the 20th TFW, and touched-down on 12 September 1970, led in by the wing boss Col Grant A Smith. The 20th TFW formed at 'Heyford with three squadrons of F-111Es, beginning with the 79th TFS 'Tigers', which was up to full strength by January 1971, followed by the 55th TFS and 77th TFS. The squadrons settled in quickly, and were soon out and about on long-range practice CPMs (Combat Profile Missions) designed to take advantage of the 'Vark's' prodigious range. By the time of the bicentennial year, F-111s of the 20th TFW had become a familiar sight, although only one of the wing's jets wore this patriotic scheme during the hot summer of 1976. The 'BiC-Bird' (68-028, Article A1-197), with extra nose decoration, was the 38th Echo to roll off the GDFW line, and was accepted during August 1970 as part of the unstopping of the great bottleneck when over 100 aircraft were finished or nearing completion and crowding out Fort Worth! Initial deliveries of F-111Es were to the 27th TFW at Cannon AFB, New Mexico, which used them to train crews for its own squadrons pending the arrival of the much-delayed F-111D. However, air and ground crews bound for 'Heyford mostly worked-up at Nellis under the guidance of the 4527th CCTS and FTD (Field Training Detachment) 916[S], respectively (Roger Wright via Richard L. Ward)





Above A 'Thunderbark' being reinstated to glory following a regular 150 hr interval engine inspection. The hoist and airframe rings belie the ease with which it could be slotted back in place, along airframe runners, but defy the complexities involved in 'plumbing' it back into operation – a process which took at least 'one solid morning's or afternoon's effort', having due regard for a thorough check-out. Most major engine problems have been traced to loose nuts in the fuel lines. 'Heyford's F-111Es were for seven years the only credible long-range, all-weather interdictors in NATO, and were described by Col Rick Matteis (a *Combat Lancer* veteran who clocked-up his 2000th 'Vark' hour at the base in 1975), as 'The most feared aircraft in Europe'. Their range and B-61 nuclear LADD capability have kept these aircraft at the leading edge for over 20 years (*Peter E. Davies*)

Above right Maj John Long is ceremoniously presented with an award from GD and the then 20th TFW commander Col 'Tony' McPeak – none other than Four-Star General Merrill A McPeak, who is currently Chief of the Air Force — following a thorough dousing with a fire hose upon the completion of his 3000th 'Vark' hour in 1979. He was the second pilot to reach this figure, the first past 'three grand' being Gil Hodges (*Dick Brown*)



Right WSO (Weapons Systems Officer) Ray Wilcox gets the 'okay' from Flight Examiner Dick Brown (at right, who rated Capt Dudley Lowery as best-ever 'Wizzo'). Dick accrued the most hours in the 'Vark' as Instructor Pilot, 3454 in all, so his views stand – and his record is unlikely to be challenged. He reckons his friendly rival in the Air Force, Brad Insley, is 'a Rookie because he never flew the F-111F!' (*Dick Brown*)







Above 'The Chief', alias 'Top Vark' of the 20th. The artwork alludes to one of the original commanders, Col Richard M Baughn, who claimed a Red Indian ancestry. 'The Chief' remained in vogue from 1987 through the commands of Cols Graham E Shirley, Lee Downer and Larry Stellmon, and was applied to either 67-120 or 68-020, depending upon which jet was available for 'top dog' treatment (in this instance, the Fiscal 68 bird, and to enthusiasts' delight both beasts are destined for preservation in England). Previously, Brig Gen Dale V Thompson's jet carried the honours, and in that instance the gold scroll 'My Lucky Blonde' (*Author*)

Right And 'Top Tail', bearing the colours of 'Red Squadron' (the 77th TFS 'Gamblers'), 'Gold Squadron' (the 79th 'Tigers, to whose AMU the aircraft is assigned), and 'Blue Squadron' (the 55th, alias the 'Fightin' Fifty-Fifth'). A 'Grey Squadron' flash was added after April 1991 when the colocated 42nd ECS was absorbed into the 20th TFW. The lightning bolt design owes its origins to the days when the wing flew Super Sabres (*Author*)







Left Bow of the 79th FS during the 1991 'Tiger Meet' was Lt Col Steve Mires. His jet, 68 049, was suitably adorned with feline motifs and bore the 20 mission symbols which it accrued during *Desert Storm*, while flying from Incirlik AB, Turkey, under the command of Brig Gen Lee Downer's 4770th Combat Wing – the first 'Super-Wing' to be created and tested in battle. The 20th TFW's contingent of 22 'Echoes' (including two digital AMP E models) accrued 413 combat sorties (Author)

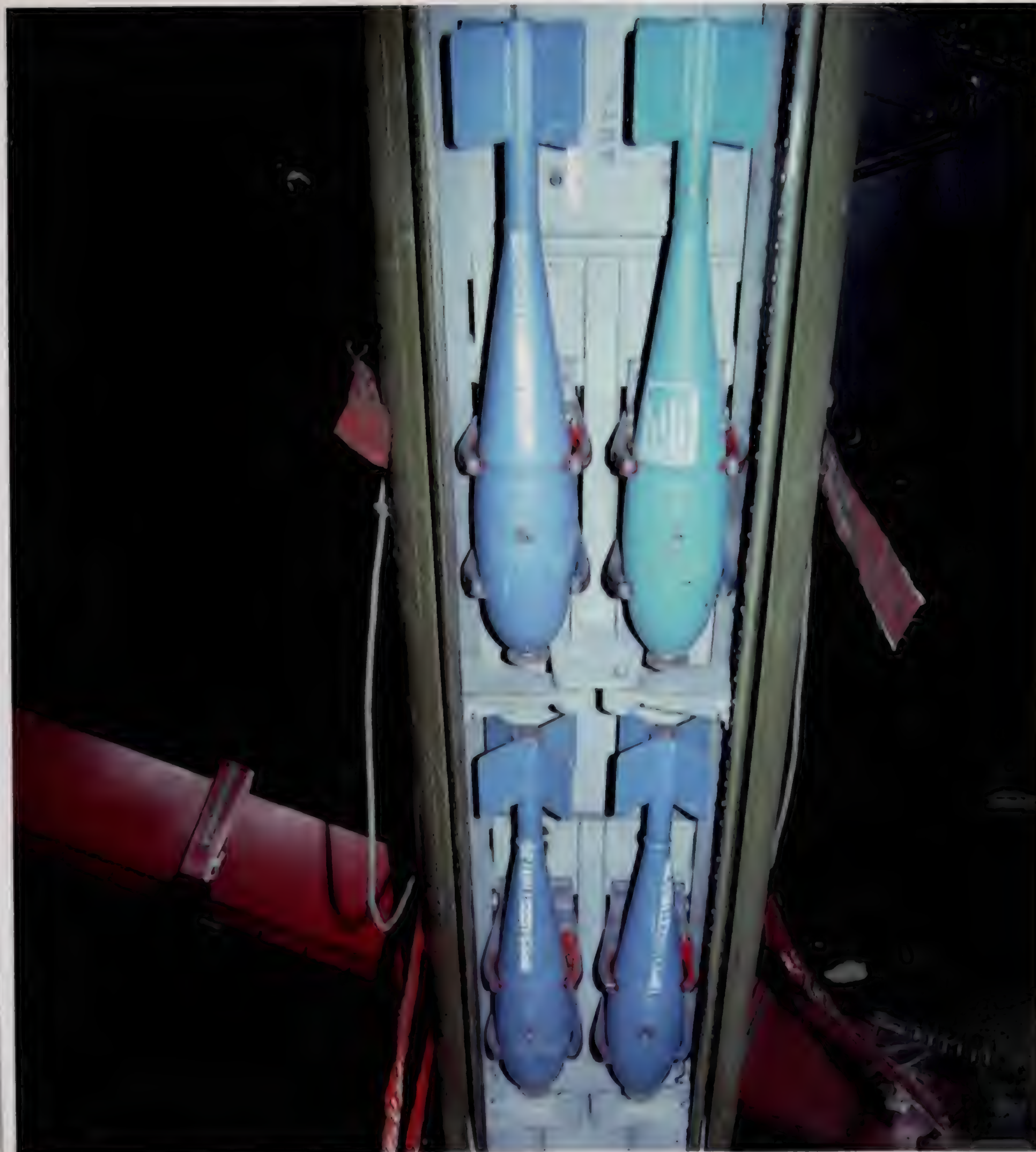
Above Brad Insley, patriarch among F-111 pilots, 79th TFW 'Tiger', and gentleman. Brad flew 75 combat missions/161 hours against a heavily defended North Vietnam, and eventually logged a staggering 8056.9 hours/2009 sorties in the 'Vark' (Peter J. Davies)





**Above** The original AN/ALE-28 CMDS (countermeasures dispenser set) fitted to the 'Speed Bumps' was apt to jam, so as a sideline to AMP the F-111 had these high capacity Tracor AN/ALE-40 chaff/flare dispensers installed. The two forward modules pack 30 radar-disruptive RR-170 chaff cartridges each, and the aft ones 15 fierce-burning MJU flare decoys apiece (*Author*)

**Right** 'Slick' BDU-33 25 lb practice bombs slung in their USAFE-standard cylindrical SUU-21/A underwing pods. The F-111Es customarily launch with two practice pods, one fitted in this configuration, and the other with a half dozen orange Mk 106/BDU-48 'Beer Can' high drag bomblets. The practice weapons share the same ballistic characteristics as the full-size ordnance, and are used on a day-to-day basis. Drops of full-sized inert or live ordnance are performed biannually on WTDs to Nellis, Zaragoza or Incirlik (*Author*)







Above A taste of life at low-level over Loch Ness. USAF crews flew at around 450 knots at or above the specified 250 ft minimum dictated by NATO safety regulations. Maj Dick Brown reckoned that that was '100 ft too high and 200 knots too slow' to prepare crews for real combat. *Red Flag* addressed that imbalance, while Europe continued to provide realism with regards the complexities of navigation over a 'zillion roads and a million villages', not to mention the cold, misty weather of northern winters (Dick Brown)

Left Dedicated Crew Chief (DCC) SSgt Ismael Sarraga from the 77th AMU christened his beast (68-078) 'Whispering Death'. The name was a title originally coined by Gen Vang Pao of the Royal Laotian Army in a letter of commendation to the 'Vark' wing at Takhli during the closing stages of the Vietnam war, when aircraft provided bombing support over the 'P-D-I' (Plain Des Jarres). This Echo (68-078) is currently on the Logistics Command test roster at Sacramento, daubed with the new tail codes 'Sierra Mike'. The USAF still runs the DCC programme, which imbues the ground crews with greater pride in the aircraft by allocating each and every individual (plus his or her assistant) their own 'tail'. Until the late 1970s, flightline maintenance of the 70-plus jets in each wing was pooled under an all-embracing Organization Maintenance Squadron (Peter F Davies)





A four-ship of F-111Es going through 'Last Chance', prior to take-off. The ground crews 'pull the pins' and check the IFF by means of a portable pack, while the air crews confirm wind and barometrics with the tower (*Peter E Davies*)



# 'Tron fighters

To fulfil the much-needed job of a blanket noise-jamming platform, the USAF naturally selected the 'Vark'. Two jets were converted to undertake trials work, Article M-1 serial 66-049 making its first flight on 10 March 1977. This airframe served as the aerodynamic testbed, whilst a second prototype (Article M-2 serial 66-041) performed the bulk of the electronics trials. The guts of the system is the Eaton-AIL AN/ALQ-99E 'Closed Loop' JSS (Jamming Subsystem), which was designed to 'sweep' across the A to J wavebands (0.1 to 10.5 Gc) and respond automatically with simultaneous jamming from ten computer-steered antennae located in the ventral 'canoe' – the essence of 'Look Through' capability. Photographed on approach to Runway 09 at Upper Heyford, Raven 66-055, nicknamed 'Boomerang', was one of 17 EF-111As based in Oxfordshire in 1988. Owing to its massive 'football' and 'canoe' retrofit, the ole' 'Fox' can get caught unexpectedly in strong crosswinds: these (a function of aerodynamics, not weight versus thrust). To prevent this, the normal 35 knot crosswind limit for regular 'Varks' is reduced to 28 knots for Ravens (both using a wing-low rudder correction technique with a maximum 'crab' angle of 10 degrees being imposed by the main gear). (Author)







**Above** First to get into the jamming business was the 388th Electronic Combat Squadron (ECS) 'Griffins' based at Mountain Home AFB, Idaho, which received its first aircraft (66-051) on 5 November 1981. Commanded by Vietnam veteran Lt Col Tom Pickering, the unit became the 390th ECS on 15 December the following year, with the new motto 'Deny, Deceive, Defeat'. Grumman's Calverton, Long Island Plant delivered 42 production Ravens between 4 November 1981 and 23 December 1985, including the reworked testbeds, and Mountain Home received the lion's share. This particular EF-111A is the chief 'Spark Vark' of the 390th ECS, and is seen dormant at its home base in October 1987. This squadron is the only 'Vark' unit with (albeit an unofficial) 'MiG kill' to its credit. Flying one of the 'Heyford jets (66-016) from Taif, Saudi Arabia, Capt Denton and his Electronic Warfare Officer (EWO), Capt Brandon, came under pursuit from an Iraqi Mirage F.1EQ, and immediately initiated a 'combat descent' – a standard procedure which calls for selecting 54°-72° sweep, piling on the thrust, and 'unloading' the machine in a radar-controlled rapid descent. The enemy pilot made chase and promptly ploughed into the desert floor! (*Frank B Mormillo*)

**Right** The cockpit of the 'Electronic Fox', showing how the radar and nav/attack displays were shifted to the middle, and the right-hand side adapted to the electronic combat configuration, dominated by the DDI (Detail Display Indicator) and control pedestal, used by the skilled EWO to monitor radar threats and to ensure that the jammers are being used productively. The 'other' Raven unit formed on the 'new' 'Spark Vark' was the 42nd ECS, which was recommissioned on 1 July 1983 and received its first aircraft on 3 February 1984, piloted-in by the squadron commander Lt Col David L Vesely and Maj Roger W Brooks. The unit was originally assigned to the the 66th ECW, headquartered at Sembach AB in Germany, but passed to the 20th TFW after the conclusion of *Desert Storm* (*Grumman*)







**Above** The flurry of Raven nose art that appeared at RAF Upper Heyford in 1987 was the inspiration of Capt Kent Malcom, a Canadian, and Officer-In-Charge of the 42nd AMU at the time. All 13 machines were decorated, including 66-056, nicknamed 'Babyjam'. Other names of note included Raven 67-032, the 'Black Sheep', which was to have been called 'Thunderbird' but for the fact that it had to be fitted with a spare black radome borrowed from the F-111E spares pool, and became the odd ship out in the squadron! (Richard I. Ward)

**Right** Chugging away merrily, a tractor pushes a Raven tail-first back into its TAB-Vee on the north side of RAF Upper Heyford. The squadron began to draw down in June 1992, and on the 26th there were only eight aircraft on strength, including three that had returned from Incirlik that afternoon, one in the 'shop' for phased maintenance inspection, and three others already repainted in the markings of the 390th ECS awaiting dispatch – including '055 seen here – leaving only a pair of 'regulars' (Author)







**Above** The petite artwork of ill-fated Raven 66-056. Nicknamed 'Jam Master' (formerly 'Babyjam'), the jet crashed only hours after this photo was taken on 2 April 1992, following a fuel fire on take-off at 1500 hrs. It was abandoned by Capt Jeff Coombe, pilot, and Capt Dave Genevish, EWO, without injury. To everyone's relief, there were also no casualties on the ground when the abandoned aircraft flopped down inverted in the middle of a food plant at Barton Hartshorn in Buckinghamshire. Pieces of the aircraft later decorated the 'Crow Bar' in the 42nd ECS bunker as a salutary reminder. Several crews reckon that emergencies like this are more frightening than 'day one' in combat! 'Jam Master' flew 48 combat missions in the Gulf War. The machine returned from post-war TDY duties with the 4404th Combat Wing at Dhahran International Airport in November 1991, and from a subsequent deployment from Incirlik, Turkey, in late February the following year, six weeks prior to the accident. Detachments of four aircraft were maintained at both Middle Eastern venues after the cessation of hostilities (*Author*)

**Right** The crew of 'Knight Jammer' (67-041) prepare to taxi out, eyes to the camera. The 'Spark Vark' modifications involved a 25 per cent change to the basic Alpha variant, which embraced over three tons of jamming receivers, processors, excitors and emitters, plus mission computers. Eight hundred pounds of weight was added to the tail alone, which was beefed-up to support the 'listening' portion of the AN/ALQ-99E JSS, housed in the fin top 'football' and blisters. At 55,275 lbs, the aircraft possesses the highest empty weight of all the variants, crews reporting that the aircraft behaves like 'a regular A-model with a 6000 lb payload', and full 6g manoeuvres are possible (*Richard I. Ward*)





Ravens ready to roll at 'Heyford in the early morning sun. Depicted here are '033 (formerly named 'Excalibur') and '048 (named 'Horse With No Name'), both Fiscal Year 66 machines, which did tours at Incirlik, Turkey, under the control of the 4770th Combat Wing during *Operation Proven Force*, and at Dhahran, Saudi Arabia, during the ensuing *Operation Provide Comfort*. Aircraft rotations to the Middle East were frequent, the biggest single gaggle deploying from Upper Heyford to Incirlik on 21 December 1990 with the callsigns 'Ralph 11-15' (Author)



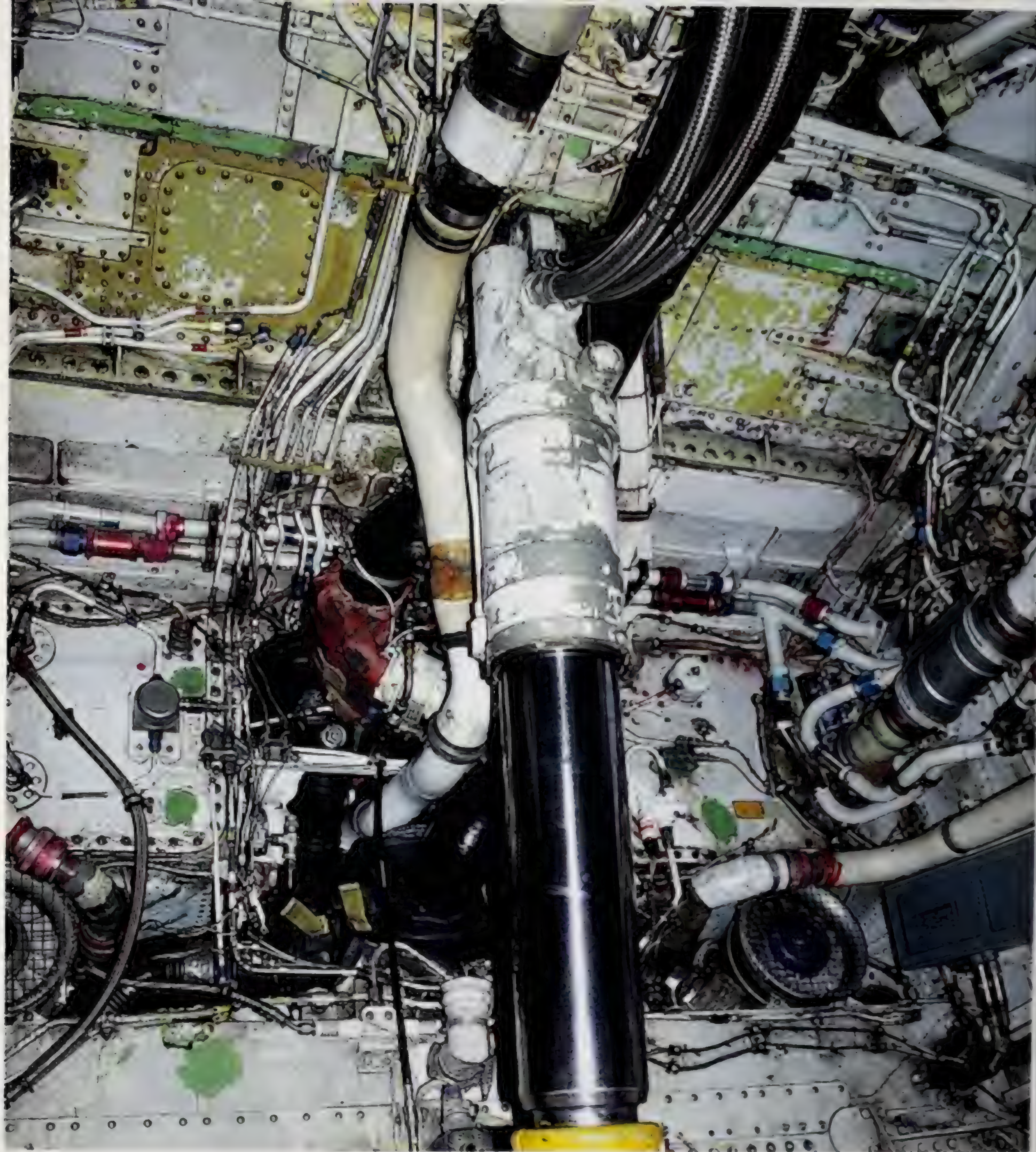




**Above** Being prepared for its long flight west to Idaho, '055 sits quietly on the Heyford ramp. Behind the pristine jet a 'UH' coded F-111E of the 77th TFS 'Gamblers' is preflighted prior to performing a routine low-level sortie over Scotland. The 42nd ECS formally disbanded on 11 July 1992, and its best aircraft, along with the prime examples from Mountain Home, are at the time of publication being pooled under the resurrected 470th ECS at Cannon AFB, New Mexico (Author)

**Left** Not the eye of a prowling night owl, but the Triple Flow 1 inlet of a Raven, complete with vortex generators to provide a homogenous flow of air to the Pratt & Whitney compressor. Ravens initially flew with early model TF30-P-3/103 engines, but these were later 'kitted' to the more powerful dash 109 configuration, boosting maximum combined take-off thrust to 41,680 lbs (Author)

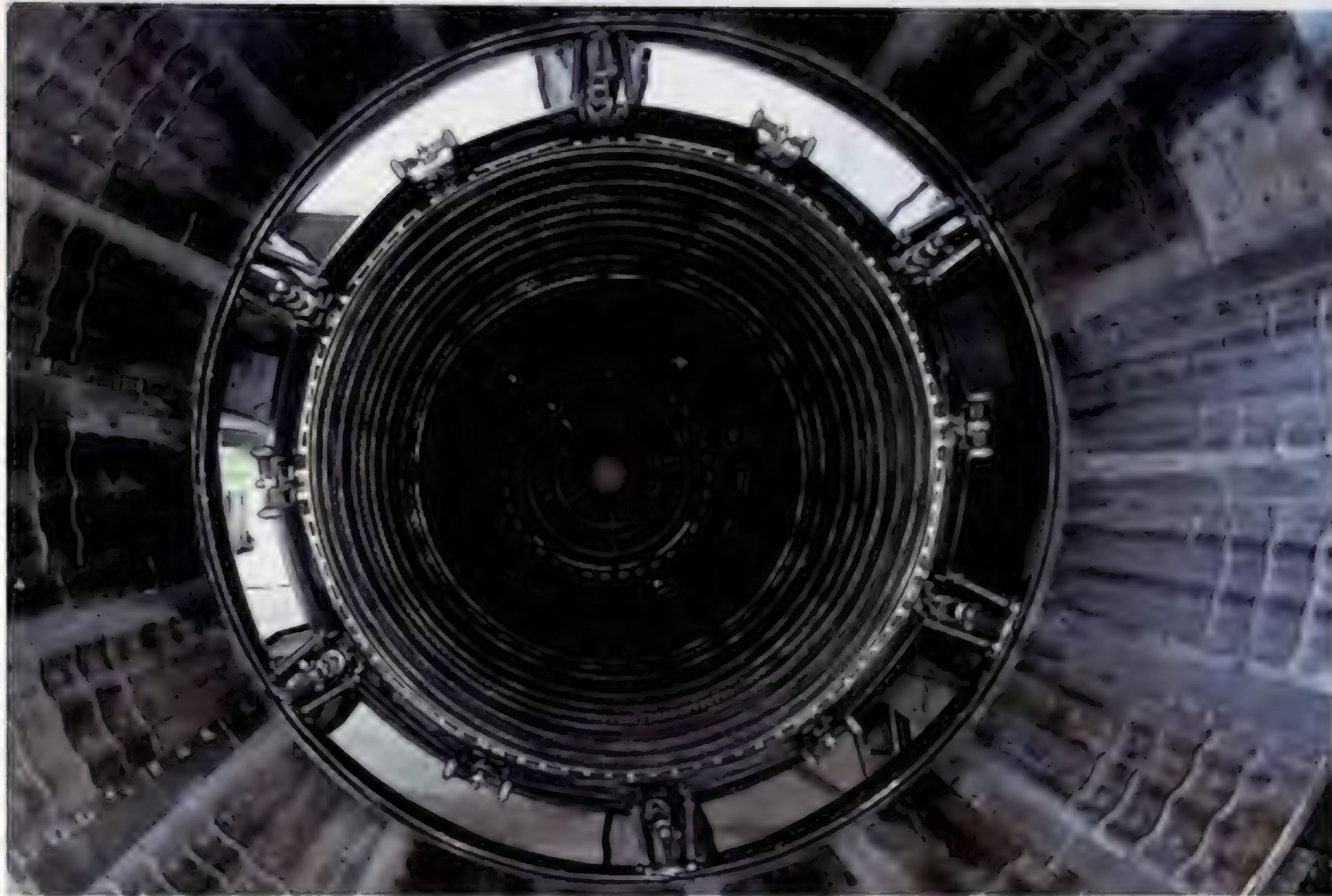




Left The big wheel bay, showing the massive oleo that drives the airbrake-cum-wheel door. This is pushed by hydraulic fluid pressurised at 3500 psi, and is activated by a switch on the control column, which is particularly useful for bleeding-off speed for formation join-ups, or while on approach (Author)

Above One tactical 'Fighter-Gator' remarked that 'We use the biggest rubbers in the fighter community!' Indeed, the BF Goodrich 30-ply 47 x 18 in monsters are identical to those employed on Lockheed's 'Fat Albert'! SSgt Colson, former DCC with the 77th AMU, reckoned that the huge tyres lasted about 100 sorties' worth of rolling and pounding, ten times as long as those used on other fighters. A tail bumper deployed along with the landing gear to prevent exuberant pilots from 'draggin' a...' down the strip, and this created a frightening shower of sparks on occasion! The hubs, axles and braking systems, however, housed in this massive titanium structure, are unique to the 'Pig', and come in two distinct versions: the tactical type, depicted here, able to cope with a maximum AUV on take-off of 50 tons, and the heavyweight models used on the FB and C, capable of sustaining a gross landing weight of 109,000 lbs at a sink rate of up to eight and a half feet per second! It was officially referred to by GD as the 'Variable Terrain High Flotation Landing Gear', though the F-111's inlets, which have a habit of hoovering all kinds of debris, dictate that the aircraft use only prepared runway surfaces and these have to be kept thoroughly swept at all times (Author)





**Above** The business end of the Raven's powerplants, kitted from TF30-P-103 to -109 standard. TF30 engine fires have been a common denominator in both 'Vark' and Navy Tomcat losses, and even now, 25 years after the engine entered service, fixes are still in progress *(Author)*

**Right** The fuel vent on the F-111 sits prominently at the base of the 'hour glass' fairing which separates the engines. This is the device which provides the raw material for the F-111's traditional party piece, the spectacular torch or dump and burn *(Author)*





# The 'Heath

Right Lakenheath officially transitioned to the 'Vark' under *Project Creek Swing*, beginning on 1 June 1977, when 48th TFW Vice Commander Col J W Tietge arrived with a sixteen-ship force following a 4900-mile, 10 hr 20 min ferry flight from the States. Further batches followed in rapid succession to equip the 494th 'Panthers', 493rd 'Roosters', 492nd 'Bolars' and 495th 'Aardvark University', in that order. 'Vark Flagship' for most of the 'Statue of Liberty Wing's' illustrious history at the 'Heath' was F-111F No 78 (72-1448), nicknamed 'Miss Liberty', photographed here in March 1985 with its flank bearing the logos of its four component fighter squadrons (*Jim Rotramel*)

Below The 48th TFW's squadron logos adorning the flank of 72-1448. The 495th 'Aardvark University' was unique as USAFE's only RTU. Its instructor crews were described by one of their commanders, Lt Col 'Willy P' Kramer, as the 'Cream of the Crop'. Novices posted to the unit were checked-out in 45 working days, while the unit itself had a shadow operational role as the 'Thundervarks'. As its official motto 'Mala Ipsa Nova' testified, the 'Old are Good and the New are Bad!' (*Richard L. Ward*)







**Above left** The key ambassador at Lakenheath was F-111F 70-2390 'Lady Liberty II', which has the distinction of having been lead-ship during the Libya strike (24 F-111Fs from Lakenheath participated in the raid, which took place on 14 April 1986), spearheading the assault against the Al Azziziyah Barracks with the callsign 'Remit 31'. It was also first into the thick of things during *Desert Storm*, where it accrued 29 combat sorties. The Air Force Museum is eagerly charting its progress, with pride of place already slated at Dayton, Ohio, although with luck they will have to wait several years before they get their hands on this remarkable machine! (Richard I. Ward)

**Left** Wearing 'North African Campaign' (Libyan strike) stripes that were applied to all the wing's jets following the 1986 raid, this 17 ft 'Vark fin' stands tall against an typical British sky. The 492nd Aircraft Maintenance Unit, a subdivision of the 548th Aircraft Generation Squadron (AGS), operated from Taif, Saudi Arabia, as the 'Justice' Squadron during *Desert Storm*, launching a total of 658 sorties. This machine was known to its crews as 'Bolar One', which alludes to the 492nd FS squadron's

association with native headwear (in this instance, the English Bowler). Crews who failed to party in suitable attire suffered the ignominy of having their ties ceremoniously cut by the squadron commander! The unit created a subcult division - '492nd North' - following the arrival of the first replacement F-15E 'Mud Hen' on 21 February 1991. '492nd South' continued with F-111F ops, incorporating the Strike Eagles into three-ship 'Vark' flights on Mondays and Tuesdays to familiarize them with the local flying procedures. The squadron stood down from 'Vark' ops in early May 1992, when Lt Col Carpenter took charge with a fistful of five Eagles and 13 crews (Author)

**Above** 'Red Squadron', the 494th 'Panthers', has always been the anchor of Lakenheath's 'Vark' establishment. This squadron 'bird', 178, was considered to be the best overall jet in terms of reliability and performance - although even the best need a tyre change from time to time! 74-0178 chalked-up 56 combat sorties in the Gulf, the 494th AMU 'Liberty' squadron's (and overall wing's) high-flyer (Jeff Wilson)





**Above** Twenty-five tons of thrust pour out the nozzles of this beast from the 494th 'Panthers' to effect a swift departure. The fighter squadron's motto, 'Felix Iste Te Vorabit', can be translated from the Latin to read either 'This cat will devour you', or 'I will be pleased to devour you!' In any event, its intent is clear: woe betide any fool who dares to tread on the Panther! (Aviators who commit this misdemeanour on the large Panther decorating the floor of the squadron building are liable for a round of beers) (Tim Laming)

**Right** A trio of Foxtrots line up prior to tanking from an Extender during the pre-Libya strike practice phase. Operation El Dorado Canyon was exhausting: a 13-14 hour-long mission over a 5600 nm route bypassing France and Spain (some crews chalked-up 11 AAR plugs by the time they got home), and all that on top of a sleepless 30-hour schedule! It was hardly surprising that only four crews struck their targets bang-on: IL-76 *Candid* crusher 'Putty 11' (in 71-0893), Barracks-bashers 'Remit 31 and 33' (in 70-0390 and 74-0178 respectively, the former flown by the mission commander), and Sidi Bilal disrupter 'Jewel 63' (in 74-0177). To everyone's dismay, 'Karma 51' (70-2389), crewed by instructors Maj Fernando L. Ribas-Dominico and Capt Paul F. Lorence, failed to return (Jim Rotramel)







**Above left** Another training mission completed, the pilot of 71-0685 cycles the gear down, deploys the slats and flaps, and lines up on finals to the 'Heath'. The crews flew their sorties based on routes drawn from a 1000-point chart; they would simply 'join the dots' in an appropriate fashion, having due regard for NOTAMs, low-level practice flying requirements, fuel and timing. The Mk III BNS 'guts' of the F-111F could store a massive 1000 'Data Points' and up to 20 sets of 100 'Sequence Points' (Jim Rottrum)

**Left** Smart' bombers on the wing in October 1983. The 493rd FS 'Roosters' main speciality was the Rockwell GBU-15(V) TV - or imaging infrared-guided glide bomb, which was 'timed' at the target at a range of between eight and twenty miles (depending on altitude and launch speed, typically supersonic), and guided smack to the desired aimpoint by means of an AN-AXQ-14 data-link pod bolted to the beast's belly, between the strakes. This fit necessitated moving the ECM pod onto the Pave

Tack cradle (precluding its operation on that sortie). The GBU-15 mission was performed by a select number of 'Roosters' at Lakenheath, these elite crews being the only people in USAF qualified to use it - 'and that was all they specialised in', according to their contemporaries. The high cost of the weapon dictated that degree of attention of detail. Interestingly, six months after this photo was taken, F-111F 70-2413 served as 'air spare' for the Libya strike, flying with four one-ton GBU-10C/B LGBs as 'Karma 54' (Jim Rottrum)

**Above** In combat, the GBU-15s were 'timed' at Mach 1.3 for a ten mile glide range. Graphs exist to help crews plot the weapons release point at specific speeds and heights AGL. Training tasked a pair of jets to the mission, with one aircraft (with data-link switched on) guiding its companion over the radius, while the other (with its captive bomb seeker activated) acted as the 'bomb' and 'glided' to the target. The latter then broke off as it got close to the ground, permitting the two crews to trade roles (Jim Rottrum)





**Above** Armed only with a pair of drop tank-like travel pods, a well looked after F-111F of the 493rd FS closes on an anonymous KC-10 Extender prior to commencing a brief stint of AAR (*Jim Rotramel*)

**Above right** F-111F 70-2402 cruises with live Mk 82 Snakeye retarded bombs onboard. The Snakeye imposed a 500 knot delivery limit, above which the pop-open cruciform tail was liable to fail, obliging pilots to sometimes throttle-back the engines to idle during the hair-raising attack run (though this technique apparently was not the origins of the 'Vark's' *nomme de guerre* 'Whispering Death'). The system was replaced by the BSU-49 'Ballute', or AIR, during the mid-1980s, expanding the delivery envelope to as fast as the crew dared to fly (*Jim Rotramel*)

**Right** A pair of 'Varks' on the wing with 500 lb GBU-12B/B LGBs installed. These are the smallest 'smart' bombs in the inventory, packing a modest amount of tritonol wrapped in a thick prefragmented steel body; the biggest is the GBU-28/B 'Deep Throat' sledgehammer, based on the 4700 lb BLU-113/B penetrating warhead (*Jim Rotramel*)







**Above** F-111F 72-1449 mars over the countryside north-east of Adana, Turkey, whilst on a Weapons Training Deployment (WTD) to Incirlik. Two years later, this machine flew with the callsign 'Lujac 21' as part of a pair of four-ships tasked with striking Tripoli Airport. However, it aborted, as did seven other machines from the strike package (five of them over the target – two due to Pave Tack, one to a faulty generator, another to timing, and one with a 'down' TFR). Systems reliability had improved markedly by the time combat ops commenced in the Gulf five years later. As one aviator described it, 'the little girls knew they had an important job to do and didn't play-up – who says aircraft don't have souls?' (Jim Rotramel)

**Left** February 1986, and a gaggle of F-111Fs refuel en route to the Adriatic. Long duration sorties from the 'Heath to Incirlik, Turkey, were practised frequently just prior to *Operation El Dorado Canyon*, as much to give the crews a feel for multiple refuelling from the new Extenders as to sharpen their long-range bombing skills. 20th TFW F-111Es conducted similar long-range sorties from Upper Heyford, codenamed *Ghost Rider*, which culminated in low-level weapons drops over Goose Bay, Canada. In the event, only the 'smart' F-111F and radar-jamming EF-111A marks were committed to battle. Col Bob Venkus, one of the practiseses here, recently published his narrative of the training effort, entitled *Raid on Qaddafi* (Jim Rotramel).





**Above** On return from Incirlik to Lakenheath in December 1983, Jim 'Dirt' Marquiller and Terry 'Tayter' Tatterfield display the 54 degree wing sweep of F-111F 70-2374. On the 21st of that month this same crew punched out of F-111F No 5 (70-2366, former 'Bicentennial Flagship' of the 'Gunfighters') over the North Sea near Scarborough (Jim Rotramel)

**Left** 'Whoosh!' December 1983, and tail number 70-2374 whizzes past Snake Castle, east-south east of Incirlik. Crews regularly ran the low-level gauntlet through Alexander's Pass while on WTD to Turkey. Other WTD venues where crews could push the throttles to the browall and drop full-sized ordnance included Zaragoza, Spain, and Nellis, Nevada (Jim Rotramel)





Left and above F-11F 70-2366 photographed a year before its fateful end. Of special interest is the famous cement factory (above), billowing out smoke below. If the TACAN ray and at Incirlik went out of operation, crews simply looked for the cement plant! (Jim Karamel)





**Above** F-111F 'Zero-One-Tres' points its nose nonchalantly at the morning sun, while 'Quizmo' Brown (in silhouette) recounts the general dynamics of flying the machine to a fellow 'Liberty Wing' officer. The slick shape of the supersonic striker is purposeful. F-111 crews wear standard flight equipment: Nomex flight suit, G-vest and helmet. Owing to the 'Vark's' capsule-regulated 'shirtsleeve' environment, they are not obliged to squeeze into the sweaty rubber-lined Anti-Exposure Suit – known to all flyers as the 'Poopi Suit' – which is mandatory for all sorties when ejection brings with it the possibility of a cold-water dunk. Other life-preserving gear includes the underarm LPU 'water wings', which many crews also stow rather than wear at all times. The F-111 cockpit routine remains unique for a fighter in this respect (*Author*)

**Right** Sun-drenched Nellis, Nevada, was a regular destination for the 48th FW's 'Foxtrots', and proved good preparation for *Desert Storm*. Up to a dozen aircraft deployed for the six-week-long exercises, with three lots of crews rotating in for a two week session each. Crews were initially restricted to 300 ft altitude; during week two, they could pull out the stops and fly at 600-700 knots as low as 100 ft AGL – one hundred feet lower than the TFR would permit in the fully automatic 'hands off' mode! In this photograph F-111F serial 71-0891 trundles out of its parking spot for a Red Flag 89-3 mission, loaded up with a dozen Mk 82 AIRs, ready to bash the practice range. The 48th FW made its last appearance at Red Flag in early February 1992. The eight aircraft deployed were subsequently shipped off to the 27th FW at Cannon AFB, New Mexico, to fill up the swelling ranks of the 524th FS 'Hounds', which formally accepted its first F-111Fs on the 15th of that month. Additional aircraft were reassigned to Cannon as and when the aircraft were due back in the States for PDM rework. The 'Roosters' were the last operational 'Vark' squadron at Lakenheath (*Jim Rotramel*)







Right 'Smart' imagery in action, shot 'down the VID' during *Desert Storm*. At the top is the PPI (Plan Position Indicator) radar sweep in 'Ground Auto' wide scan, with radar crosshairs superimposed; below is the Pave Tack FLIR image, with sensor-cueing crosshairs. Note the small rectangle, which provides a cue as to where the pod is looking relative to the aircraft (in this instance, rearwards to port)  
(Via Jim Rotramel)



Left The 'office' of the F-111F. The pilot's instruments still tend towards 'needles and dials', with a concession to the 1960s fashion of vertical-tape instruments, whereas the 'Wizzo' enjoys access to digital systems, LED position displays, and banks of push-buttons. The big hooded VID (Virtual Image Display) protuberance features two tubes, a nine-inch one for the radar sweep, and a six-inch one for the Pave Tack FLIR imagery. These are harmonized, and the monitor also doubles as a TV display for electro-optic bombs such as the GBU-15  
(Author)





**Above left** The phallic Pave Tack pod, which is located forward of the huge main gear wheels, gives the top-of-the-line Foxtrot a distinctly masculine appearance. Designed and built by Loral Aeronutronic and known as the AN/AVQ-26 (airborne-visual, special-type, model 26), it is attached to a cradle which rotates through 180°. The outer doors feature a 'V' cut-out to accommodate the pallet. The Pave Tack's 'eyes' consist of two laser/receiver 'peepholes' and the massive Gallium Arsenide FLIR aperture – the biggest man-made crystal to go into series production, and single most expensive component in the thousands which constitute the 'Vark'. The resolution of the FLIR, which can be presented in 'white hot' or 'black hot' modes on the cockpit VID, is unmatched. Eighty-five pod cradles were retrofitted to the F-111F fleet between 1981 and 1985, and a further 17 to the RAAF's F-111Cs shortly afterwards (*Jim Rotramel*)

**Left** 73-1444 undergoing rework by a forward-emplaced SM-ALC team at Lakenheath in April 1992. Five months prior to this photo being taken, at approximately 1748 GMT on the evening of 29 October 1991, 'Triple-Four's'

left engine comprehensively blew-up. Using his considerable cool and expert piloting skills, Capt Craig 'Quizmo' Brown, accompanied by his 'Wizzo', Lt Jeff 'Fuzzy' Zeller, managed to recover the stricken beast at RAF Lossiemouth. 'Quizmo' reported that it was scarier than flying combat in the Gulf! Cleaned up a little and fitted with a new engine, the jet was cleared for a one-off ferry flight back to Lakenheath with Maj Don Louks at the helm. Repaired, the aircraft was returned to flight status in July. A suitable 'fix' is being introduced to all the F-111Fs to correct recurrent problems with the turbofans (*Author*)

**Above** Gulf veterans from the 'Panthers' form a 'Victory-V' in formation with one of their trusty 'swingers'. In July 1992, while still under the command of Lt Col Ken Combs, the squadron ceased all 'Vark' ops – marking the end of a fifteen-year era. Fortunately, the crews' expertise has not been squandered as many of them continue to fly the 'Foxtrot' with the 'Fireballs' or 'Hounds' at 'Vark City' in the High Plains of New Mexico (*Craig Brown*)





With full augmented thrust engaged, a 'Panther' accelerates to leave the cameraship in trail. The five-zone afterburner provides a rapid but 'soft light' (in flight, it only 'kicks' hard when fuel is down to around 10,000 lbs – but with that little remaining, the beast's pair of TF30-P-100 turbofans will guzzle it all up in under two minutes!). This weary warrior (73-711) was another of the 'Panthers' high-performers. Although on paper all machines are the same, in practice every squadron has its share of 'super-sh\*\*hot-ships' and 'dogs' (Jim Rotramel)





**Initially called a 'turkey' because of structural problems, the swing-wing F-111 has proven itself in combat and claimed its rightful position as the USAF's premier strike aircraft. Controversially blooded over Vietnam, the mighty 'Aardvark' has won further battle honours in strikes against Libya and during *Desert Storm*.**

